

## Potential Impacts of the LCB TMDL on Agriculture in the Gap Watersheds

The draft TMDL for Lake Champlain has identified some very aggressive phosphorus reduction goals, especially for the so-called “gap” watersheds. This includes a 75% reduction in phosphorus loading in the Missisquoi Watershed and a 56% reduction in loading in the South Lake Watersheds. Even in St. Albans Bay a 36% reduction in loading is going to be required. Unfortunately these watersheds are also ones that have a greater intensity of agricultural land use. This will mean that a large portion of the reductions will be allocated to agriculture. It is also important to note that in these gap watersheds “more of the same practices” (above the identified reduction) will need to be implemented in order to meet the in lake goals for the TMDL.

Another issue is that in some watersheds such as the Missisquoi a large portion of the phosphorus load is coming from forest land (14%) and from instream/river sources (43%). There is currently no clear indication that we can achieve a 75% reduction in loading from these sources in any reasonable timeframe. One result of this could be a need to reduce loadings from other sources such as urban/suburban and agriculture to even a greater extent.

Before we finalize the TMDL and move too far into the implementation phase we need to make sure that these reduction goals are achievable and that implementing them will not prohibit the continued use of land in these watersheds for agricultural production.

Some of the data that indicates that these goals may be difficult to reach at best, or unrealistic at worst, include:

- Initial calculations from the EPA Scenario Tool and from work on the Resource Stewardship Pilot in Mud Creek indicate that agricultural phosphorus loading will have to be reduced to **below 0.5 lbs/ac/yr** to meet the 75% reduction target in the Missisquoi Watershed.
- The SWAT analysis performed in the Missisquoi Watershed by Stone Environmental calculated phosphorus loading from all agricultural fields. They produced maps that categorized loadings into 5 categories, from very low to very high. The very low category was for loads below 1 lb/ac/yr of phosphorus. The very high category was for loads above 4 lbs/ac/yr.
- A national CEAP analysis used APEX to estimate phosphorus loading from 33,000 fields across the U.S. They determined that phosphorus loading on 80% of the fields would be below 4 lbs/ac/yr under current conditions over a ten year period.
- Recent research from the upper Midwest indicate that as much as 50% of the phosphorus loading from agricultural fields is coming through tile drainage systems in watersheds with intensive tiling. As of yet we do not have any reliable, efficient means to significantly reduce phosphorus loading from this source.

One means of addressing these concerns would be to run an analysis on portions of several actual farms. The purpose of which would be to see if this level of reduction is achievable and in which situations it is not. Currently Stone Environmental is developing a Vermont specific APEX model. This model could be used to estimate existing phosphorus loads from fields on several Vermont farms and then run scenarios that include a variety of different conservation practices. This undertaking would provide more of a real life, farm specific evaluation of what is going to be necessary to meet the new TMDL goals in these gap watersheds.